Feb. 14, 1950 N. H. SHILLMAN 2,497,471

TAPE CONSTRUCTION

Filed Sept. 10, 1947

Fig. 1.

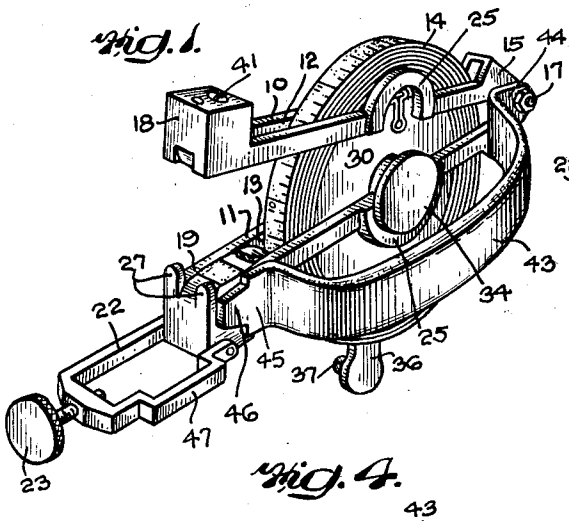


Fig. 6.

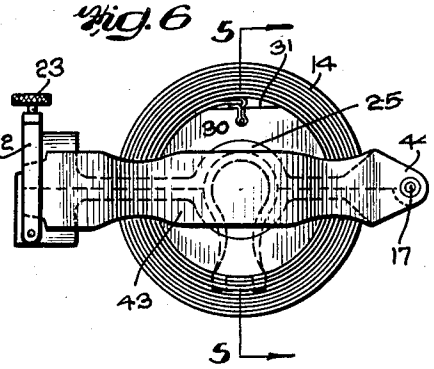


Fig. 4.

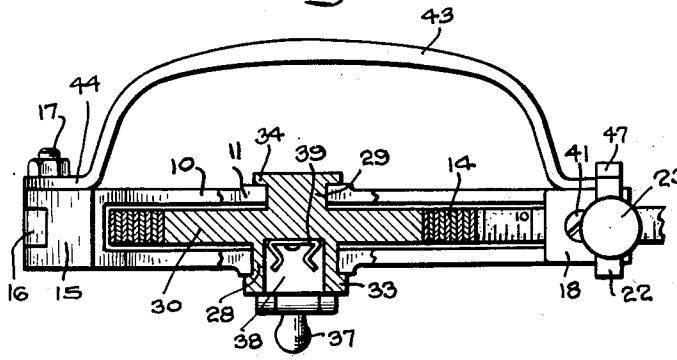


Fig. 5.

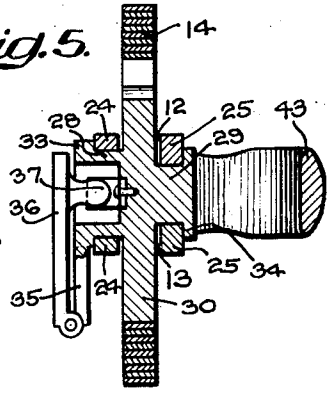


Fig. 2.

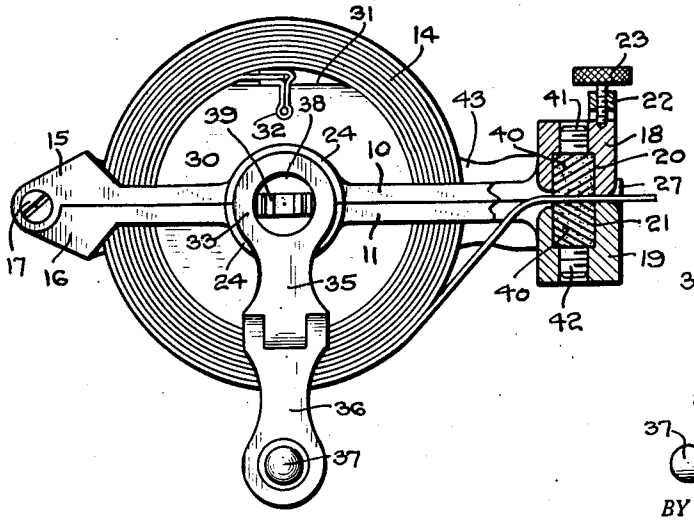
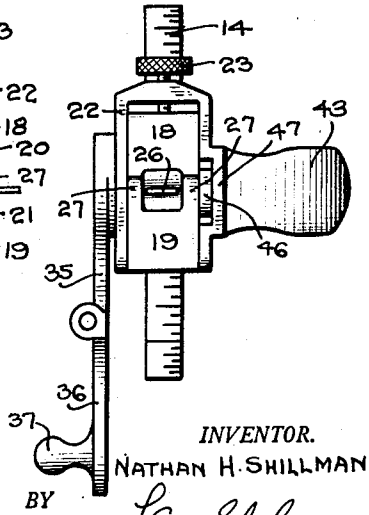


Fig. 3.



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TAPE CONSTRUCTION

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2 Claims. (Cl. 242—84.8)

1

This invention relates to supporting frames for extensible measuring tapes and more particularly to frames for use in connection with that type of thin steel graduated tape which is adapted to be wound on a drum within the frame for use in sounding the depth of tanks, wells and the like containing oil or similar liquids, and for general use in the field.

Heretofore, measuring tapes and drums of this type have been fully enclosed within a casing member provided with an entrance opening through which the tape passes, such casings being shown and described in my prior United States Letters Patent Nos. 1,485,634 and 1,679,178. Associated with the casing member at the tape entrance end thereof is a tape wiping device to automatically clean the tape as it passes therethrough. It is among the principal objects of this invention to provide a streamlined, lightweight rectangular shaped open frame for a measuring tape and drum which will expose the tape whereby braking action may readily be applied thereto by the thumb or hand of the user of the tape.

A further object of the present invention is to provide a rectangular shaped open frame formed of a pair of complementally shaped members pivotally connected together at their rear ends and releasably interlocked at their front ends, the said front ends of the frame being respectively provided with wiper elements relatively arranged to provide a passage for movement of the tape into and out of its supporting frame and being characterized by the provision of guide means for preventing such lateral displacement of the tape in the region of and relatively to said wiping elements, as might cause the tape to become frictionally bound between the interlocked front ends of the frame.

Other objects of this invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings and finally pointed out in the appended claims.

In the accompanying drawings, which are illustrative of a preferred embodiment of the present invention—

Figure 1 is a view in perspective of the two complementally formed members of the tape frame, the handle and the locking yoke therefor being shown in opened position with the rotary crank element and drum about which the tape

2

is wound being shown in position upon the lower frame member;

Figure 2 is a side view of the closed frame showing the relative arrangement of the several parts thereof including the winding drum to which the tape is attached and the wiping blocks, the latter being shown in vertical section;

Figure 3 is a view of the entrance end of the frame showing the guide lips for the tape;

Figure 4 is a top view of the frame with a part of the upper frame member removed and the rotary crank element, drum and tape in section to show the manner of seating the same in the lower frame member;

Figure 5 is a view in section taken on line 5—5 of Figure 6; and

Figure 6 is a view of the frame showing the side thereof opposite to that shown in Figure 2.

The same part is designated by the same reference numeral whenever it occurs throughout the several views.

A characteristic feature of the tape frame of the present invention is that all of the parts of the frame are open to inspection at all times and that the frame can readily be opened or closed and the component parts easily taken apart and then reassembled. No other tool than a screw driver or the like is necessary to accomplish this. The frame essentially consists of a pair of hollow rectangular shaped members, substantially duplicates, which when closed are in juxtaposition to form the whole, this being effected by hinging the two members together at one end of the frame and by the provision of a yoke and set screw locking device at the opposite end. The frame has a central opening, forming bearings of unequal diameters in which is seated the rotary crank element and the winding drum with the tape thereon. The free ends of the frame halves are complementally formed along their opposing faces to form a tape slot, one of said free ends being provided with upstanding lips to define the opposite side edges of the opening through which the tape may pass as it is extended from or wound into the frame.

It is to be noted that the rotary crank element and the winding drum are so constructed that they constitute one single integral element of the complete device. That is, the winding drum proper is integrally formed with and upon the shaft of the rotary crank element and is provided with a slot to receive therein the inner end of the tape.

Referring now more specifically to the drawings, it will be observed that the frame consists

primarily of two members indicated generally by the reference characters 10 and 11. These members 10 and 11 are each of substantially hollow rectangular shape having openings 12 and 13 therein such that when assembled together in juxtaposition with their complementally formed edges in engagement with each other a frame, extending diametrically of the tape assembly, is provided having a relatively narrow rectangular opening therein in which may be accommodated the measuring tape 14. At the rear ends of the members 10 and 11 are provided dovetailed hinge pin bosses 15 and 16, respectively, through which extends a hinge pin 17, thus providing a hinged joint at this end of the frame. At the opposite or front end of the frame the relatively flat open members 10 and 11 have integrally formed therewith oppositely projecting block shaped portions 18 and 19, these portions being in turn provided with recesses or sockets 20 and 21, respectively for a purpose to be described.

Hinged to one of the frame members, preferably to the member 11, at the extreme forward end 19 thereof is a yoke 22 of generally U-shape, the legs and base of the U being adapted, when swung from the open position of Figure 1 upwardly, to embrace the juxtaposed front ends of the frame members 10 and 11 as shown in Figure 2. By means of the set screw 23 passing through the base of the yoke 22 and engaging the upper surface of the portion 18 of the upper frame half 10, the frame halves 10 and 11 are locked firmly into closed position in the manner shown in Figures 2 and 3.

The frame halves 10 and 11 are respectively provided with enlarged semi-circular bosses 24 and 25 which, when the halves are locked together, conjointly constitute bearings on opposite sides of the frame in which are seated the opposite ends of the journal of the winding drum, which will be described. In this particular instance, the bearing 24 is of greater diameter than the bearing 25, though for the purposes of this invention these bearings could well have been of equal diameter. As is best apparent in Figures 1 and 3, the front ends of the frame members 10 and 11 are complementally formed in the opposing surfaces thereof to provide a slightly flared slotted opening 26 for easier passage of the tape into and out of the frame, when the latter is closed. It will be observed that the lower frame member 11 is slightly longer than the upper frame member 13 (see Figure 2) and that the front end thereof extends beyond the corresponding end of frame member 10 for a short distance. Upstanding from this forward extension of frame member 11 are a pair of laterally spaced lips 27—27 which define therebetween the tape opening 26 extending transversely between the frame members 10 and 11. These lips 27—27 form side guides for the tape in passage from the drum to effectively prevent the same from entering between the frame members on either side of the opening 26. Without such guide lips 27—27, it is possible for the tape, if it does not run true within the slot 26, to work its way between the frame members on either side of the slot along the line of closure therebetween and become jammed or locked therein, thus breaking the tape or making it inoperative and necessitating an adjustment of the parts, which may include an opening of the entire device, before the tape may again be operative.

The rotary crank unit, which is preferably in this instance an integral part of the winding drum, is shown most clearly in Figures 1, 4 and 5. This unit consists essentially of a large journal 28 formed integrally with a smaller journal 29, these journals being adapted to seat respectively in the bearings 24 and 25 in the frame. Formed intermediately of the journals 28 and 29 is an enlarged central portion 30 which constitutes the drum upon which the tape 14 is adapted to be wound. A portion of the edge of the drum 30 is flattened, as at 31, and has a transverse slot cut therein terminating in an enlarged opening 32, so that the inner end of the tape suitably provided with means to fit within and engage said slot and opening may be adequately secured to said drum.

To prevent lateral displacement of the crank unit with respect to the frame, integrally formed flanges 33 and 34 are provided at the opposite ends thereof, these flanges embracing the exterior surfaces of the bearings 24 and 25 respectively, when the crank unit is positioned within the frame. Preferably formed integral with the flange 33 is a lateral extension 35 to which is pivoted the crank arm 36. This arm 36 is provided with a handle 37 adapted to seat, when folded out of use, within a pocket 38 provided therefor in the body of the crank unit and wherein the same is retained against accidental displacement therefrom by a spring clip 39.

A stuffing box is formed integrally at the front end of the frame by the provision of oppositely disposed sockets 20 and 21 in each of which is disposed a wiper element 40. These wiper elements are preferably formed of a suitable nonabrasive material and are arranged by any suitable method to fit snugly within their respective sockets 20, 21. Set screws 41, 42 passing through the base walls of the sockets from the exterior surfaces of the frame provide a suitable means for adjustably projecting the wiper elements outwardly from their sockets into wiping engagement with the opposite surfaces of the tape as the latter passes through the tape opening 26 to be wound from or about the drum. When the tape is not in use, the wiper elements, due to the pressure exerted upon the tape, act as a brake thereon, thus preventing any unintended unwinding.

A handle 43 is provided for the device, this handle extending substantially from the pivoted rear end to the front end thereof with the main body portion thereof being spaced therefrom a distance sufficient to readily accommodate the hand of a user of the device. One end 44 of the handle is mounted directly upon the pivot pin 17 while the opposite free end 45 of the same is provided with a projecting tab 46 adapted to overlie the meeting edges of the ends of the frame members 10 and 11 at one side thereof. The locking yoke 22 is formed with an offset portion 47 adapted to embrace the tab 46 when the frame is locked and ready to use.

By reason of the construction described, it will be seen that a lightweight tape frame device or unit has been provided which is not bulky and in which the tape and the drum therefor are in full view at all times for inspection and cleaning and which may be readily and conveniently opened as described for the insertion or removal of the crank and winding drum unit and of the tape. Thus all of the elements of the device are readily available for purposes of cleaning and adjustment. Furthermore, with the open frame device for the tape and drum it will be obvious that braking

means may quickly be applied to the tape as it unwinds from the drum under the height of a plumb bob with which this type of tape is normally used. With the arrangment of side guide lips for the tape as it enters the wiping elements at the entrance end of the device, there is no danger of the tape becoming bound between the upper and lower frame members along the meeting line thereof and consequently there is no danger of the tape becoming jammed or locked and breaking or otherwise causing the tape device to be inoperative and unusable.

It is understood that various arrangements and modifications other than that described above may be devised and yet come within the spirit of this invention. Accordingly it is the intention that the appended claims be construed broadly to cover such alternative arrangements and modifications.

What is claimed as new and useful is:

1. A tape holding device comprising a pair of complementally formed members adapted when fitted together to provide a tape housing having laterally spaced bearings for a tape drum and a tape passage opening at one end thereof, adjacent ends of said members being hinged together, wiping elements disposed in the free ends of said members, means to releasably interlock said ends of the members to form said tape passage opening therebetween, said wiping elements being adapted to engage the opposite surfaces of said tape in passage to clean the same, and guide means defining said opening for limiting lateral

displacement of the tape, said guide means including a pair of laterally spaced elements integrally formed on the free end of one of said tape housing members and adapted to overlie the end surface of the other of said members when the latter are fitted together.

2. A tape holding device comprising a pair of complementally formed members adapted when fitted together to provide a tape housing having laterally spaced bearings for a tape drum and a tape passage opening at one end thereof, adjacent ends of said members being hinged together, wiping elements disposed in the free ends of said members, means to releasably interlock said ends of the members to form said tape passage opening therebetween, said wiping elements being adapted to engage the opposite faces of said tape in passage to clean the same, and spaced guide lips at the end of one of said members defining said opening and extending in front of the end of the other of said members for limiting lateral displacement of the tape.

NATHAN H. SHILLMAN.

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The following references are of record in the file of this patent:

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